the child's early endeavors. It is not until the synergic movements of both limbs are effected through coordinated spinal reflexes that the act of progression ceases to be attended with conscious effort. The act of walking, then, as it is finally learned, is dependent on the acquisition of adaptive coordinated reflexes. Although these coordinated reflexes express some purposive movement and comprise the integrative action of the nervous system, they are reflexes nevertheless, just as the simple tendon reflex or pupillary reflex which consist in the activation of three factors, viz., initiation, conduction and end effect. "The outcome of the normal reflex action of the organism is an orderly coadjustment and sequence of reactions."

This experimental view of synergic activity of skeletal muscles admits of very striking clinical application so far as the lower extremities are concerned. If complemental opposition is a purely spinal coordinated reflex, then in spinal diseases in which the "synapse" is affected or destroyed we must expect to find some modification of complemental opposition; and this I find to be a fact. In ataxic subjects who suffer from tabes dorsalis, and also in Friedrich's hereditary spinal ataxia, thus far I have always found that there is a disproportion between the strength of complemental opposition and the initial movement. If an ataxic subject is directed to hold one leg in the air against resistance we find that the other leg is opposed against the couch with much more force than is employed in the initial resistance; that is, the ataxic patient always overdoes the complemental opposition. This is true of patients with moderate degrees of spinal ataxia. But when the ataxia is extreme, when all kinesthetic impulses are interrupted, when the synapse is destroyed, we see quite another behavior. If such a patient is asked to close his eyes and then lift one leg off the couch there will be a symmetrical movement in the other limb; there is then no complemental opposition in such a patient when his eyes are closed. But if the patient is directed to open his eyes and then lift one leg off the couch, he will exercise complemental opposition in the other leg, but the opposition is stronger than the force of the initial movement. Such a patient with the aid of his sight behaves just as the patients in less severe cases behave with eyes closed or opened. An extremely ataxic patient with his eyes closed reacts similarly to the malingerer or hysterical patient, but for an entirely different reason. In the extremely ataxic patient complemental opposition is absent because of the loss of synapse, but in the hysterical subject complemental opposition is absent because of cerebral inhibition. If complemental opposition is a coordinated spinal reflex, then we should find it present in spastic spinal paraplegia; and this I find to be true.

The method of eliciting the initial activation of the flexor iliofemoral muscles of one limb is to give the patient a pin-thrust in the sole of the foot. If the paralytic patient is given a moderately strong prick with a pin on the sole of the foot the thigh is flexed on the pelvis and the leg is flexed on the thigh. If the pin-thrust is stronger, then the flexion reflex is stronger. Thus in genuine spastic paraplegic patients, or in those paraplegic patients in whom all reflexes are not lost, there is a constant relation between the intensity of the pin-thrust and the intensity of the flexion response. This would not be true in functional cases. Moreover, when the flexor reflex is elicited by the pin-thrust on one side we can feel that it is accompanied by activation of the extensor iliofemoral muscles of the other side if the observer's hand is placed beneath the flexor tendons of the knee of the opposite side. The complemental opposition, it is true, is not strong; but neither is the initial reflex very strong, although the thigh and leg will be well flexed in a completely paraplegic patient if he is given a sharp pin-thrust in the sole of the foot. In a patient who had an acute myelitis with absolute paraplegia inferior with urinary and fecal incontinence and absolute loss of all sensations and all reflexes in the lower extremities, there was no such response to the pin-thrust in the sole of the foot for a very obvious reason.

Recently I employed this method of eliciting complemental opposition in a patient who suffered from paraplegia inferior after an injury. I shall mention only the facts which have a bearing on this sign. The patellar reflexes were both present, though diminished in intensity. There was absolute motor paralysis of both thighs and legs. To superficial stroking of the soles of the feet there was no response, but when firm pressure was employed in stroking the soles there was a dorsal flexion of all the toes, i. e., the response could be elicited through the protopathic paths but not through the epicritic paths. Directly after the accident the patient had priapism and marked disturbances in rectal and bladder innervation. When this patient was given a strong pin-thrust in either sole there was a good flexor response and it was accompanied by activation of the extensor iliofemoral muscles of the opposite side.

SUMMARY

To sum up the results of my observations: I think that we are justified in assuming that complemental opposition is a contralateral coordinated spinal reflex and is always present when the spinal synapse is not completely destroyed unless cerebral inhibition intervenes.

Moreover, we must observe in cases of functional spastic paresis of one limb (the iliofemoral muscles, inclusive) that the complemental opposition is present on the sound side because the patient activates his flexor iliofemoral muscles on the initial side, but through cerebral intervention he prevents the normal reciprocal inhibition of the extensor muscles of the affected side. Under such conditions the functional character of the spastic paresis is betrayed by the disproportion between the complemental opposition of the two sides respectively.

702 Rose Building.

CARCINOMATOUS POLYPOSIS OF THE COLON

WITH REPORT OF AN INTERESTING CASE

EDMUND A. BABLER, M.D.
Assistant Surgeon, Deaconess Hospital
H. J. NIEBRUEGGE, M.D., AND CARL FISCH, M.D.
ST. LOUIS

The very interesting character of the clinical manifestations and pathologic findings, combined with the apparent rarity of the disease in point, necessitate the presentation of our report before discussing the subject in detail.

AUTHORS' CASE

Medical Part: Dr. Niebruegge

History.—Miss A. M., aged 19, consulted me Aug. 1, 1908, complaining of a severe offensive, bloody diarrhea. The following data were elicited: The patient's mother's mother died from cancer of uterus. Parents were alive; mother healthy; father had had intestinal trouble for a long time. There were six girls in the family; one died from insolation. There was no tuberculous history. Menses began at 13; painless and regular. The patient had always enjoyed good health until the summer of 1905, at which time her present illness began.

Present Trouble.—During the early part of July, 1905, the patient became nauseated, and vomited at frequent intervals. This continued throughout the remaining part of 1905. She was not sick enough, in her opinion, to consult a physician; she would vomit the greater portion of her food, hence did not eat very much. Gradually the nausea and vomiting disappeared. During 1906 she observed that her stools were occasionally bloody; she would have two or three stools a day, and about once every two weeks they were bloody. In November, 1906, the nausea and vomiting returned and continued at intervals until the spring of 1907. During the summer of 1907 the stools became more liquid in character, and practically always contained blood; they also became offensive. Tenesmus was never present. The patient suddenly felt a desire to go to stool; evacuation always brought satisfaction. Since January, 1908, the patient had been having six or eight stools daily; they were always offensive; sometimes a fairly well-formed stool was passed; stools always contained red blood; the patient never noticed that the stools were tarry. During the month previous to the consultation she had been feeling weak and tired out. She frequently felt nauseated and occasionally vomited. She craved a great deal of water; her mother stated that during the past two months she had been having an evening rise of temperature; she frequently felt very hot. At the time of consultation the patient felt exhausted, but ate whatever she desired. She had not had pain in the abdomen. The rectum felt very sensitive. The patient had lost weight; her appetite had always been good until recently.

Examination.—The very anemic and worn-out appearance of the patient was striking. Pulse was 90; temperature, 99.3. The respiratory tract was apparently normal. Musculature was good; the abdomen of normal contour. Nothing abnormal was found in the abdomen on palpation, except tenderness over the entire course of the colon from the ileocecal valve to the rectum. Rectal examination failed to reveal stricture or abnormal growth; it caused considerable pain. A specimen of stool was obtained. It was a reddish, brownish liquid and very offensive. On standing it quickly separated into an upper sanguinous, cloudy portion, and a lower thick, yellowish portion which looked like pure pus. The urine did not contain albumin or casts. Specimens of stool and of blood were sent to Dr. Fisch.

Diagnosis.—Patient was advised to go to the Deaconess Hospital and submit to a thorough examination under ether. Dr. Babler was asked to see her. The duration of the symptoms, the tenderness along the course of the colon, and the frequent offensive stools pointed to an ulcerative process in the colon. The age of the patient and the absence of tenesmus were confusing.

Surgical Part: Dr. Babler

Examination.—The principal finding was the marked tenderness over sigmoid and entire colon. Under ether the uterus and adnexa were found normal; the palpating hand could not find any abdominal tumor; the sigmoid and colon could be outlined without difficulty; digital examination found the rectum free from stricture and abnormal growth. The proctoscope was introduced; the mucosa was found intensely congested, and the seat of numerous small erosins; no tumor was visible. The sigmoidoscope was only partially introduced, because of the thickened, infiltrated condition of the rectum; we suspected an ulcerative colitis and were careful lest we caused hemorrhage or perforation. The mucosa was everywhere intensely congested; neither stricture nor polypi or other abnormal growths could be made out. Since the patient did not take the anesthetic very well, further investigation was discontinued.

Diagnosis.—I felt that Dr. Niebruegge's diagnosis was probably correct. The fact that the patient had never passed fleshy growths or noticed masses protrude from rectum, combined with our failure to find rectal or other growths, seemed to strengthen the suspicion that she had chronic ulcerative colitis. We thought that Dr. Fisch would throw some light on the subject; the duration of the lliness seemed to exclude tuberculous colitis. Dr. Fisch reported marked leucocytosis; absence of tubercle bacilli and parasites in stools, but presence of large quantity of pure blood, epithelial cells and pus.

Treatment.—The usual treatment for chronic ulcerative colitis was instituted; the colon was irrigated daily with silver nitrate solutions, or 3 per cent. argyrol solution (one quart); bismuth subcarbonatis and phenylis salicylas were given by mouth, and only the least irritating food was permitted. In spite of the fact that restricted diet usually acts badly in these cases of ulcerative colitis, we deemed it best in our case owing to the nausea. The treatment did not benefit the patient; her stools became less bloody and frequent but more painful; she began to vomit and feel worse; temperature fluctuated between 99.5 and 103.8; pulse between 90 and 132. At the end of a week or ten days an appendicostomy was proposed. On the evening preceding the day set for the appendicostomy, symptoms of acute appendicitis appeared; vomiting was present and there was also marked tenderness over sigmoid and cecum. The patient also complained of pain in both the right and left anterior superior spine of ileum.

Operation.—The abdomen was opened at 8:30 p. m., through the border of the right rectus. The cecum and sigmoid were found intensely congested and considerably distended. The appendix was found lying behind the cecum; it was six inches in length, intensely congested, considerably thickened, and curled on itself; it was bound down by a very short mesoappendix. The entire colon was found free from palpable growth; a constriction could not be found; the walls were considerably thickened; mesenteric glands were not perceptibly enlarged. The uterus and appendages were normal. After carefully considering the findings it was decided to excise the distal five inches of the appendix, then draw the stump through a supplemental gridiron incision at McBurney's point, suture the peritoneum to the cecum, and the appendix stump to the aponeurosis of the external oblique and to the skin. This was done as quickly as possible; linen sutures were used. The primary incision was then closed in layers without drainage. Dressings were applied and the patient put abed.

Postoperative History.—Continuous normal saline solution per rectum was given according to Murphy's technic. The patient rallied better than we anticipated. On the day following the operation the artery clamp was removed from the tip of the appendix stump, and a large quantity of gas escaped. A quart of normal saline solution was introduced by means of a catheter in the lumen of the appendix stump. Two hours later the greater portion of it passed per rectum. These colonic flushings were repeated daily and seemed to benefit the patient. The appendicostomy wound served the double purpose of permitting gas (and occasionally feces) to escape through the catheter, and of allowing colonic flushings. Toward the end of the sixth day the patient began to fail; she felt nauseated and vomited; the stools again became very frequent and bloody; the patient looked very sick and exhausted. The temperature and pulse were markedly better until the sixth day. Gradually the patient became weaker and weaker, and died on the ninth day after the operation.

Autopsy.—The parents consented to a partial necropsy. The abdomen was opened one hour after death, through the primary incision at the edge of the right rectus. The peritoneum was everywhere pale and apparently normal. The appendicostomy wound had healed perfectly. The general peritoneal cavity was free from infection. The liver, stomach, kidneys and pancreas were apparently normal. The distal six feet of the ileum and the entire colon to the lower part of sigmoid were removed and opened. The entire colon from the appendix stump to upper part of sigmoid was thickened; polypoid growths of various sizes, from pea to small hickory-nut, were found scattered throughout the course of the colon. These growths were firm and seemed to be situated in the mucosa; the mucosa was everywhere congested and numerous submucous hemorrhages were noted. There were neither constrictions nor marked ulcerations present; in fact very few erosions were found. A few of the polypoid growths were of the long-stalked variety. The specimens were at once taken to Dr. Fisch, a summary of whose report is given below.

Pathologic Part: Dr. Fisch

A description of the microscopic findings in the material submitted to me, the macroscopic appearance of which is stated by Dr. Babler, would need far more space than is allowed for a clinical paper, in order to give proper weight to the great interest and pathologic importance of the condition. The detailed report will be published in a journal on pathology.

Microscopic Examination.—Microscopic sections revealed the carcinomatous character of the total number of the polypi; the type of this character was that of a malignant adenomatous state that resulted in invasion of the mucosa and submucosa, converting these tissues into a thick, hard layer, consisting of carcinoma tissue, all around the wall of the intestine. The upper layers of the submucosa and the mucosa were intensely infiltrated with inflammatory products, with plasma in preponderance. The intestine from the upper portion of the rectum to the distal part of the small intestine thus showed a uniform sheath of carcinoma between the muscular layers and the submucosal and mucosal layers. The two muscular layers were so far not involved, although in their lymphatic spaces many nests of carcinoma cells were present. The serosa was, as yet, intact; but considerably thickened. The condition obtained, too, for the appendix.

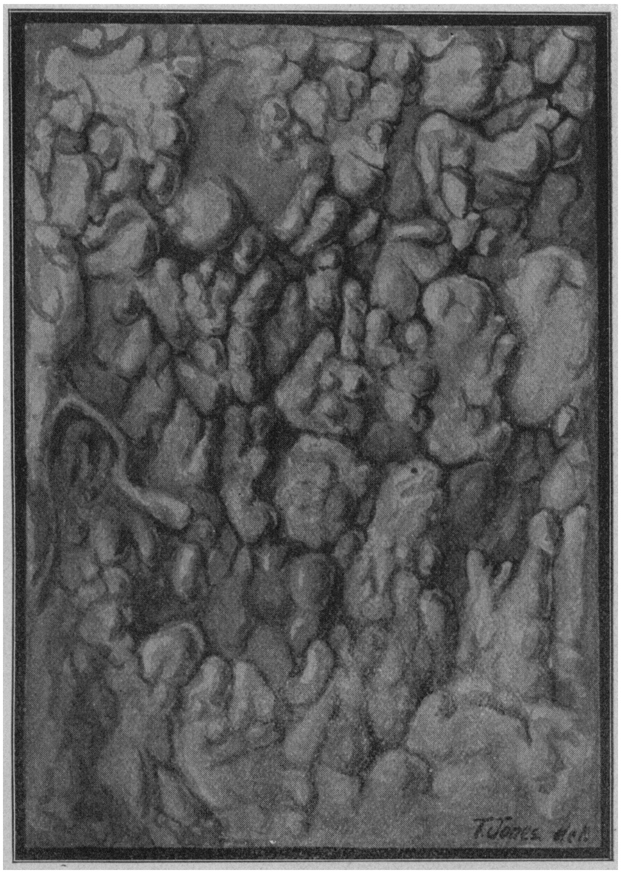

Fig. 1.—Portion of transverse colon (natural size).

In no place of the whole tract could anything be found to suggest the presence of a primary tumor. The rectum, in its distal portion, was free from any tumor formation. All of the mesenterial glands examined were free from metastatic enclosures, and nowhere in the abdomen could a metastasis or tumor be found.

The uniform carcinomatous character of the glandular tissue has not been observed before, although partial foci of this form have been seen in a few cases of otherwise benign polyposis.

REMARKS: DR. BABLER

Carcinomatous polyposis of the colon must be regarded as of very infrequent occurrence. In carefully reviewing the available literature I have been able to find only a few cases. It must be admitted that carcinoma occurs more frequently during childhood and adolescence than we have heretofore appreciated. Phillips[1] has recently collected 390 cases of carcinoma during childhood. Creite[2] reported a case of cancer of penis at 2 years; Thompson's[3] patient with adenocarcinoma of breast was only 11 years of age. The patient in Clair's[4] historic first case of cancer of colon during childhood was 3½ years of age. Recently McWilliams[5] collected 90 cases of primary carcinoma of the appendix; in 60 per cent. of 78 cases the patient was under 30 years of age. Simple intestinal polyposis is apparently a disease of childhood; carcinomatous polyposis of the colon is perhaps a disease of adolescence and adult life.

Pathology.—Hauser[6] is a strong advocate of the theory that simple polypi of colon may become malignant. Meyer[7] holds that intestinal polyposis is congenital; Zahlmann[8] reported six cases occurring in one family; Cripps[9] and others have cited similar cases. Doering[10] has recently collected reports of fifty cases of intestinal polyposis; in 46 per cent. of the cases carcinoma was also present; in many of these latter cases the polypi were simple adenomata. In our case the polypoid growths were situated in the mucosa: all that were examined showed carcinomatous structures. In Petrow's[11] interesting case the patient presented symptoms of ileus; operation showed ileocecal intussusception apparently due to polypoid growths; at autopsy two additional intussusceptions were found;

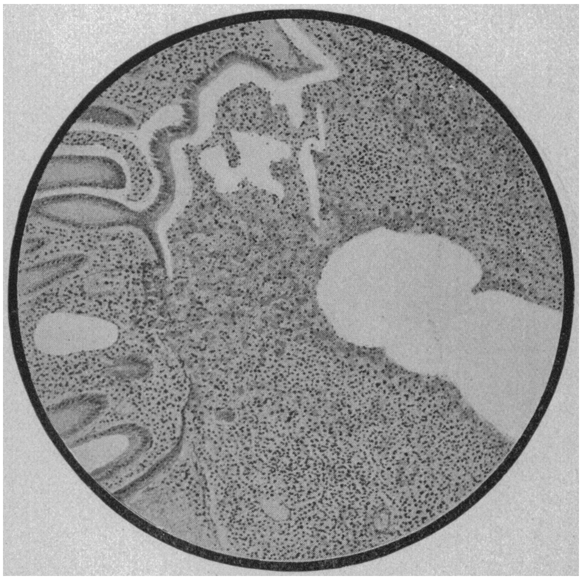

Fig. 2.—Vertical section from a small polypus (Leitz, Eyepiece 4, Obj. 3).

---

[1] Phillips: Ztschr. Krebsforsch., 1908, v, 326.
[2] Creite: Deutsch. Med. Wchnschr., 1905, xxxi, 894.
[3] Thompson: Brit. Med. Jour., 1908, ii, 502.
[4] Clair: Oesterr. Ztschr. f. Kinderh., 1855, i, No. 2.
[5] McWilliams: Am. Jour. Med. Sc., June, 1908.
[6] Hauser: Deutsch. Arch. f. klin. Med., 1895, lv, 429.
[7] Meyer: Inaug. Diss., Giessen, 1898.
[8] Zahlmann: Jahrb. über die Leistungen u. Fortschr. d. ges. Med., 1903, l, 297.
[9] Cripps. Tr. Path. Soc. Lond., 1882, xxxiii, 137.
[10] Doering: Arch. f. klin. Chir., 1907, lxxxiii, 194.
[11] Petrow: Abstr. in Centralbl. f. Chir., 1896, p. 542.

the intestine was found studded with polypoid growths; the growths showed incipient carcinomatous changes.

Simple polypi of the intestine are found most frequently in the rectum. Doering and others have reported cases in which rectal polypi were operated on and the growths found to be simple adenomata; several months or years later the patient returned with a carcinoma of the rectum; many of the polypoid growths in ascending, transverse and descending colon were found to be pure adenomata.

A striking feature of carcinomatous polyposis is the absence of metastases and of involvement of the mesenteric glands. We have collected reports of nineteen cases in which carcinoma of the colon and intestinal polyposis were present in the same patient; also reports of five cases in which the polypi showed carcinomatous changes. Multiple primary carcinomata of the intestine may occur. Bunting[12] has reported one case of multiple primary carcinomata of the small intestine and collected reports of five others from the literature. Billroth held that, in order to be multiple primary carcinomata, the growths should satisfy the following conditions:

1. Each must show a different histologic structure.
2. Each must be traceable histologically to the epithelium of its matrix.
3. Each must show its own metastases.

It is obvious that multiple primary carcinomata of the intestine will not conform to all of these requirements of Billroth, since they seldom or never produce metastases. In Bunting's case the nodules seemed approximately of the same age; each showed histogenic relation to the epithelium of the crypts of Lieberkuhn over it.

Symptoms.—Tuttle[13] has very fittingly said that the clinical manifestations of cancer of the colon vary according to the site, character and state of development of the malignant growth. He says: "Diarrhea or frequent desire to go to stool with no effectual result is the striking early symptom of cancer of the colon." In our case of carcinomatous polyposis of the colon the patient stated that evacuation of rectal content always brought comfort; tenesmus was never complained of. It must be obvious that the usual symptoms of cancer of the colon are not to be looked for in cases of carcinomatous polyposis of the colon, since the growths do not interfere with the normal outflow of intestinal content; they do not, as a rule, attain sufficient size to be palpable. The frequent, bloody, offensive stools, the progressive anemia, the gradual exhaustion, the age of the patient and the long duration of the symptoms seem to me to be very impressive. In Petrow's case the symptoms of ileus caused the patient to seek medical aid. Forster's[14] patient died from tuberculosis; autopsy showed polypoid growths scattered throughout the course of the colon; the polypi showed carcinomatous change. In our case the afternoon rise of temperature was apparently due to absorption of septic material in the colon.

So few cases of carcinomatous polyposis have been reported that it is difficult to do more than cite the symptoms present in these reported cases.

Diagnosis.—The mere fact that a young person has had a bloody, more or less offensive diarrhea for months or years should at least arouse a strong suspicion of intestinal polyposis. The age of the patient and the long duration of the colitis are regarded as characteristic of intestinal polyposis. Frequent bloody stools and progressive anemia occurring in a young person should arouse suspicion. When the rectoscope and sigmoidoscope fail to clear up the diagnosis, and when the stools contain pus, intestinal débris and blood only, it is reasonable, after making a thorough examination under ether, to suspect malignancy. The diagnosis of carcinomatous polyposis of the colon may be practically impossible. In many cases, however, the finding of fleshy masses in the intestinal excreta will clear up the diagnosis. An exploratory laparotomy is preferable to prolonged doubt and delay. Bunting and others have shown that multiple carcinomata of the small intestine do not usually cause clinical manifestations. In tuberculous ulceration of the colon the symptoms do not

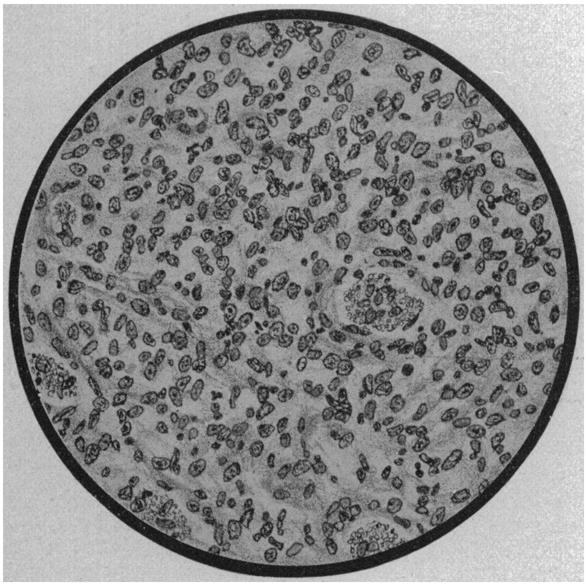

Fig. 3.—Portion of submucosal carcinomatous infiltration (Leitz, Eyepiece 4, Obj. 6).

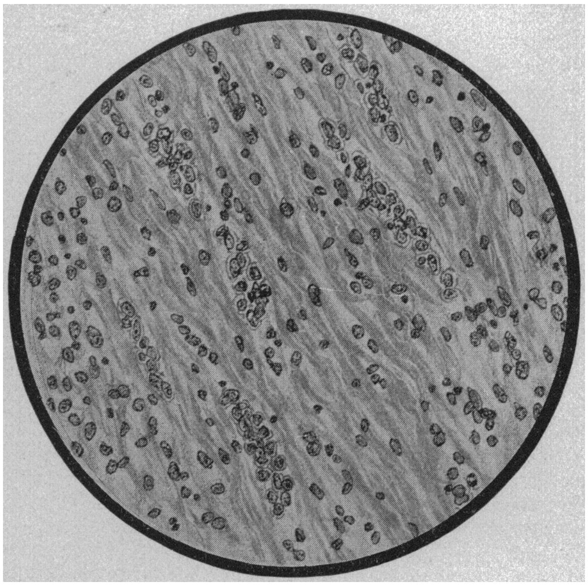

Fig. 4.—Section of circular muscular layer; nests of carcinoma in lymphatic spaces.

---

[12] Bunting: Johns Hopkins Hosp. Bull., 1904, xv, 389.

[13] Tuttle: N. Y. State Jour. Med., 1902, p. 169.

[14] Forster: Rev. med. de la Suisse, Rom., 1903, xxiii, 362.

persist so long; the clinical picture differs quite materially.

Treatment.—If the diagnosis could be made before the patient is too exhausted, and if the growths were limited to the ascending, transverse and descending portions of the colon, it is probable that an intestinal exclusion would be advisable; the excluded portion could be excised at a second operation. Rotter[15] did an intestinal exclusion in his case, but the patient was too exhausted and septic to survive. Margarini[16] made a cecal colostomy, but the patient did not improve; he then removed as many of the rectal tumors as was possible, and closed the colostomy wound; the patient recovered; the polypi did not show malignant changes. Von Black[17] was the first to call attention to the two-stage operations in cancer of the colon. Petermann[18] has recently stated that primary resection of the colon with suture has a mortality of 50 per cent.

In our case an appendicostomy was performed, since we were of the opinion that the patient had chronic ulcerative colitis. Tuttle[19] has recently collected reports of 77 cases in which an appendicostomy, as first recommended by Weir[20] in 1902, was performed. The results in chronic ulcerative colitis have been quite satisfactory. It does not seem possible that the operation could be of any great value in carcinomatous polyposis of the colon.

REPORTED CASES

Below will be found synopses of six cases which are somewhat similar to our case; in my opinion, Cases 3 and 5 are to be considered as especially so.

1. Bardenheuer's Case.[21]—The patient, a man aged 48, had had pain in the abdomen for one year, and pain on defecation. Examination showed cancer of rectum. The growth was excised. Autopsy showed polypoid growths of various sizes scattered throughout colon. Microscopic sections showed all the growths to be carcinomatous. Bardenheuer questions whether the rectal growth or the polypoid growths were primary.

2. Hanford's Case.[22]—The patient, a woman aged 34, died of adenocarcinoma of the rectum. Autopsy showed metastases in liver; the colon was studded on its inner surface with polypoid growths of various sizes; about the middle of the transverse colon was a polypus the size of a walnut which had caused a stricture; the mesenteric and lumbar glands were not much enlarged. The polypi showed incipient malignant change. Hansford contended that his case demonstrated the possibility of simple polypi becoming malignant. (The growths were malignant adenomata.)

3. Petrow's Case.—The patient, a girl aged 20, had symptoms of ileus. Operation showed ileocecal intussusception. Resection was done and the patient died. Autopsy showed two other intussusceptions, one in the jejunum and one in the ileum. Polypoid growths were found in both small and large intestine. The intussusceptions were due to polypi. Microscopic sections of the polypi showed incipient malignant changes. There was neither stricture nor large carcinomatous mass present; metastases were not found.

4. Hauser's Case.—The patient, a man aged 33, had had diarrhea and pain in the abdomen for eleven years. Stools were offensive. Examination showed cancer of the rectum. Autopsy showed polypoid growths of various sizes in stomach, small and large intestine. The polypi were found to be malignant. Hauser contended that his case coincided with that of Bardenheuer. Hauser has cited two cases in which polypi and carcinoma were present in the same patient.

5. Forster's Case.—The patient, aged 23, died from tuberculosis. Autopsy showed circular cancer of colon and multiple polypoid growths in colon. The polypi showed evidences of malignant changes.

6. Doering's Case.—The patient was a boy, aged 16, whose mother and uncle had died from a cancer of rectum. The patient had been complaining of painful defecation followed by protrusion of a fleshy mass. Examination showed polypi in the rectum. Doering removed as many of the polypi as was possible; he found that the sigmoid was also the seat of the growths. Microscopic sections of polypi showed them to be simple adenomata. Three years later the patient returned: examination showed cancer of rectum. An artificial anus was made; the patient died. Autopsy revealed carcinoma of rectum and of hepatic flexure; four carcinomatous growths in colon; polypoid growths of various size were also present in colon. Some of the polypoid growths were found to be simple adenomata converted into malignant adenomata; many of the polypoid growths were pure adenomata. In the rectal growth the conversion of simple into malignant adenomata seemed clear.

4826 Delmar Ave.—2003 Salisbury St.—3212 Pine St.

---

15. Rotter: Arch. f. klin. Chir., 1898, lviii, 357.
16. Margarini: Clinici Chir., 1903; Refer. Hildebrandt's Jahresbericht, 1903, p. 556.
17. Von Black; Cited in Petermann: Arch. f. klin. Chir., 1908, lxxxvi, 52.
18. Petermann: Arch. f. klin. Chir., 1908 lxxxvi, 52.
19. Tuttle: The Journal A. M. A., 1906, xlvii, 426.
20. Weir: Med. Rec., 1902, lxii, 201.
21. Bardenheuer: Arch. f. klin. Chir., 1890-1, xli, 887.
22. Hanford: Tr. Path. Soc., Lond., 1890, xli, 133.

PARALYTIC ILEUS

WITH REPORT OF TWO CASES SUCCESSFULLY TREATED BY OPERATION

C. H. McKENNA, M.D.
Surgeon to St. Joseph's Hospital
CHICAGO

Every operator of much experience in abdominal surgery has met with the distressing postoperative condition of abdominal distention the degree of which may range anywhere from a mere accumulation of gas in the intestine, causing only slight distress, to a well-developed condition of ileus, with impending death. During the past eighteen months two patients with such conditions have presented themselves for operation on my service at St. Joseph's Hospital.

Before entering into a discussion of the two cases under consideration it may be well to make a few remarks regarding the general subject of ileus. A review of the literature on this subject shows that volumes have been written, and that the term used without qualification leads to endless confusion, since it designates only a syndrome and describes no definite morbid condition. It will be well, therefore, in using the term to qualify it with some term which will, in a measure, at least, indicate the specific pathology. This paper deals with paralytic ileus, which may be divided into dynamic and adynamic forms. Paralytic ileus of both types is an interference with peristalsis caused by a disturbed innervation of the intestine, as opposed to mechanical ileus, which is a form of intestinal distention brought about primarily by some actual physical obstruction of the bowel.

Experimental investigation into the influences of the innervation on intestinal movements have proved uncertain, but Pflüger established, by a series of investigations, the following facts: The vagus nerve innervates the entire small intestine and the irritation of its fibers either causes movements throughout the small intestine or increases peristalsis. Irritation of the splanchnic nerve, on the other hand, tends to inhibit movements of this portion of the intestinal tract and also causes